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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Abdelgader Legnain

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EXAMINER

DEAN, RAYMOND S

ART UNIT

PAPER NUMBER

2618

DATE MAILED: 10/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/698,395	Applicant(s) LEGNAIN ET AL.	
	Examiner Raymond S. Dean	Art Unit 2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a): In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 - 27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 - 27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>1203,0504</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 23 recites the limitation "the frame rate" in line 2. There is insufficient antecedent basis for this limitation in the claim. There is no mention of a frame rate in Claims 1, 18, or 22.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 – 5, 15 – 17, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tong et al. (US 2001/0034236) in view of Wong et al. (US 6,330,460).

Regarding Claim 1, Tong teaches an antenna system for a transmitter comprising: a plurality of antennas defining a respective plurality of fixed beams which together cover a coverage area (Figures 2A, 9, Sections 0031, 0059); for each antenna a respective signal generator generating a respective signal (Figure 9, Section 0059);

transceiver circuitry connecting the signal generators to the antennas such that a respective one of the signals is transmitted by each antenna (Figure 9, Section 0059); wherein the each pair of signals transmitted on an adjacent pair of said antennas has a respective mutual micro-timing offset which is large enough that destructive cancellation substantially does not occur between the pair (Sections 0037, 0056, 1250 microseconds thus there is micro-timing).

Tong does not teach for each antenna a respective signal generator generating a respective signal comprising a common overhead component common to all the signals.

Wong teaches a respective signal comprising a common overhead component common to all the signals (Col. 7 lines 40 – 47).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the CDMA system of Tong with the common overhead component of Wong for the purpose of aiding each mobile in determining it's highest data rate as taught by Wong.

Regarding Claim 2, Tong in view of Wong teaches all of the claimed limitations recited in Claim 1. Tong further teaches implemented for a plurality of coverage areas, each coverage area being a respective sector served by the base station (Section 0031).

Regarding Claim 3, Tong in view of Wong teaches all of the claimed limitations recited in Claim 1. Tong further teaches wherein the transmitter is a CDMA base station, and each signal is a CDMA signal (Sections 0058 – 0059).

Regarding Claim 4, Tong in view of Wong teaches all of the claimed limitations recited in Claim 2. Tong further teaches wherein the transmitter is a CDMA base station, and each signal is a CDMA signal (Sections 0058 – 0059).

Regarding Claim 5, Tong in view of Wong teaches all of the claimed limitations recited in Claim 4. Tong further teaches wherein the respective mutual micro-timing offset is small enough that substantially no signal source ambiguity occurs at a receiver (Sections 0037, 0056, there will be no ambiguity at the mobile receivers due to the offset in time to avoid the overlap).

Regarding Claim 15, Tong in view of Wong teaches all of the claimed limitations recited in Claim 4. Wong further teaches at least one of pilot channel, sync channel, paging channel, quick paging, advanced access channel and auxiliary pilot (Col. 7 lines 40 – 47).

Regarding Claim 16, Tong in view of Wong teaches all of the claimed limitations recited in Claim 4. Wong further teaches for each active user located within the sector, at a given instant only one of the CDMA signals includes a user-specific traffic component generated by the respective CDMA signal generator (Col. 11 lines 11 – 30, different numbers of mobiles such as one mobile can request traffic data).

Regarding Claim 17, Tong in view of Wong teaches all of the claimed limitations recited in Claim 4. Wong further teaches wherein the one of the CDMA signals to include the user-specific traffic component for a given user is identified by analyzing signal strength on reverse links from the user, and selecting the CDMA signal corresponding with the reverse link having a best signal strength (Cols. 8 lines 21 – 25,

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11 lines 11 – 30, in order to determine the angular position the signal strength of the reverse link must be measured, determining the angular position enables the beam forming for the purposes of transmitting traffic data).

Regarding Claim 26, Tong teaches a method in a CDMA antenna system comprising transmitting signals each having a common overhead component on a plurality of adjacent beams of a sector (Figures 2A, 9, Sections 0031, 0059) with a micro-timing offset between signals transmitted on adjacent pairs of beams which is large enough that destructive cancellation substantially does not occur between the pair of beams (Sections 0037, 0056, 1250 microseconds thus there is micro-timing).

Tong does not teach transmitting signals each having a common overhead component.

Wong teaches signals each having a common overhead component (Col. 7 lines 40 – 47).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the CDMA system of Tong with the common overhead component of Wong for the purpose of aiding each mobile in determining it's highest data rate as taught by Wong.

5. Claims 6 – 14 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tong et al. (US 2001/0034236) in view of Wong et al. (US 6,330,460) as applied to Claim 4 above, and further in view of Rotstein et al. (US 6,909,707).

Regarding Claim 6, Tong in view of Wong teaches all of the claimed limitations recited in Claim 4. Tong further teaches a respective mutual micro-timing offset between each pair of CDMA signals (Section 0037).

Tong in view of Wong does not teach the sector having a sector-specific spreading code, and wherein the respective mutual micro-timing offset between each pair of CDMA signals is realized by applying the sector-specific spreading code with a respective mutual micro-offset.

Rotstein teaches the sector having a sector-specific spreading code and applying a sector specific spreading code (Col. 2 lines 24 – 42, the PN codes are the spreading codes).

CDMA systems use PN codes for spreading thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the CDMA system of Tong in view of Wong with the PN codes of Rotstein.

Regarding Claim 7, Tong in view of Wong and in further view of Rotstein teaches all of the claimed limitations recited in Claim 6. Rotstein further teaches a PN code (Col. 2 lines 24 – 42).

Regarding Claim 8, Tong in view of Wong and in further view of Rotstein teaches all of the claimed limitations recited in Claim 7. Rotstein further teaches at least one chip and less than eight chips (Col. 2 lines 24 – 42, PN codes have offsets or shifts of any of 0 to 511 chips).

Regarding Claim 9, Tong in view of Wong and in further view of Rotstein teaches all of the claimed limitations recited in Claim 7. Rotstein further teaches half a width of a

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traffic search less than a window/space implemented in a mobile terminal community with the base station (Col. 2 lines 24 – 42, in CDMA systems the chip distance is 244 meters, which is less than half of 125 kilometers of search window space).

Regarding Claim 10, Tong in view of Wong teaches all of the claimed limitations recited in Claim 4. Tong further teaches wherein the respective mutual micro-timing offset is small enough that substantially no signal source ambiguity occurs at a receiver in respect of any pair of signals transmitted by adjacent antennas (Sections 0037, 0056, there will be no ambiguity at the mobile receivers due to the offset in time to avoid the overlap).

Tong in view of Wong does not teach a short code having a sector specific offset used to distinguish between other sources using the same short code.

Rotstein teaches a short code having a sector specific offset used to distinguish between other sources using the same short code (Col. 2 lines 24 – 42, the PN codes are the short codes).

CDMA systems use PN codes for spreading thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the CDMA system of Tong in view of Wong with the PN codes of Rotstein.

Regarding Claim 11, Tong in view of Wong and in further view of Rotstein teaches all of the claimed limitations recited in Claim 10. Rotstein further teaches wherein the short codes is of length  $2^{15}-1$  (Col. 2 lines 24 – 42, this is the standard length for PN codes used in CDMA systems).



Regarding Claims 12, 27, Tong in view of Wong teaches all of the claimed limitations recited in Claims 4, 26. Tong further teaches wherein the respective mutual micro-timing offset between each pair of CDMA signals is realized by applying a mutual micro timing offset (Sections 0037, 0056, 1250 microseconds thus there is micro-timing).

Tong in view of Wong does not teach the sector having a sector-specific spreading code and applying the sector-specific spreading code.

Rotstein teaches the sector having a sector-specific spreading code and applying the sector-specific spreading code (Col. 2 lines 24 – 42, the PN codes are the spreading codes).

CDMA systems use PN codes for spreading thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the CDMA system of Tong in view of Wong with the PN codes of Rotstein.

Regarding Claim 13, Tong in view of Wong teaches all of the claimed limitations recited in Claim 4. Tong further teaches wherein the respective mutual micro-timing offset between each pair of CDMA signals is realized by applying a mutual micro timing offset (Sections 0037, 0056, 1250 microseconds thus there is micro-timing).

Tong in view of Wong does not teach the sector having a sector-specific spreading code and spreading code generators.

Rotstein teaches a sector-specific spreading code and spreading code generators (Col. 2 lines 24 – 42, the PN codes are the spreading codes, since there are

spreading codes there will spreading code generators to generate said spreading codes).

CDMA systems use PN codes for spreading thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the CDMA system of Tong in view of Wong with the PN codes of Rotstein.

Regarding Claim 14, Tong in view of Wong and in further view of Rotstein teaches all of the claimed limitations recited in Claim 12. Rotstein further teaches a PN code (Col. 2 lines 24 – 42).

6. Claims 18 and 21 – 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tong et al. (US 2001/0034236) in view of Wong et al. (US 6,330,460) as applied to Claim 1 above, and further in view of Kapoor et al. (US 6,795,424).

Regarding Claim 18, Tong in view of Wong teaches all of the claimed limitations recited in Claim 1. Tong in view of Wong does not teach wherein the transceiver circuitry is further adapted to provide transmit frequencies in a manner such that the transmit frequencies include a frequency offset from one another.

Kapoor teaches wherein the transceiver circuitry is further adapted to provide transmit frequencies in a manner such that the transmit frequencies include a frequency offset from one another (Cols. 6 lines 41 – 47, 10 lines 58 – 60, 15 lines 19 – 29).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the CDMA system of Tong in view of Wong with the

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transceiver circuitry of Kapoor as an alternative means of suppressing interference as taught by Kapoor.

Regarding Claim 21, Tong in view of Wong and in further view of Kapoor teaches all of the claimed limitations recited in Claim 18. Kapoor further teaches wherein the frequency offset is chosen to further reduce undesirable effects of signal cancellation (Cols. 6 lines 41 – 47, 10 lines 58 – 60, 15 lines 19 – 29).

Regarding Claim 22, Tong in view of Wong and in further view of Kapoor teaches all of the claimed limitations recited in Claim 18. Wong further teaches wherein the signals have unique traffic channels (Col. 11 lines 11 – 30).

Regarding Claim 23, Tong in view of Wong and in further view of Kapoor teaches all of the claimed limitations recited in Claim 22. Kapoor further teaches wherein the offset frequency is a multiple other than that of a frame rate (Col. 10 lines 58 – 60, the frequency of the tone interferer and the bin can be a plurality of values thus the frequency offset can be a plurality of values and thus a multiple other than a frame rate).

Regarding Claim 24, Tong in view of Wong and in further view of Kapoor teaches all of the claimed limitations recited in Claim 18. Kapoor further teaches wherein the frequency offset is greater than 30 Hz and less than 120 Hz (Col. 10 lines 58 – 60, the frequency of the tone interferer and the bin can be a plurality of values thus the frequency offset can be a plurality of values).

7. Claims 19 – 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tong et al. (US 2001/0034236) in view of Wong et al. (US 6,330,460) in view of Kapoor et al. (US 6,795,424) as applied to Claim 18 above, and further in view of Zhao (US 6,463,303).

Regarding Claim 19, Tong in view of Wong and in further view of Kapoor teaches all of the claimed limitations recited in Claim 18. Tong in view of Wong and in further view of Kapoor does not teach a beam-forming matrix.

Zhao teaches a beam-forming matrix (Col. 4 lines 43 – 47).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Tong in view of Wong and in further view of Kapoor with the beam forming matrix as an alternative means for creating multiple beams.

Regarding Claim 20, Tong in view of Wong in view of Kapoor and in further view of Zhao teaches all of the claimed limitations recited in Claim 19. Zhao further teaches a Butler matrix (Col. 4 lines 43 – 47).

8. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tong et al. (US 2001/0034236) in view of Wong et al. (US 6,330,460) as applied to Claim 1 above, and further in view of Benning et al. (US 2003/0022635).

Regarding Claim 25, Tong in view of Wong teaches all of the claimed limitations recited in Claim 1. Tong in view of Wong does not teach means in the transceivers for providing transmit phases that include a time dependent phase offset from one

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another, wherein the phase offset is chosen to reduce undesirable effects of signal cancellation.

Benning teaches providing transmit phases that include a time dependent phase offset from one another, wherein the phase offset is chosen to reduce undesirable effects of signal cancellation (Section 0012).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the diversity method of Benning in the system of Tong in view of Wong as an alternative means for providing improved received signal statistics and performance as taught by Benning.

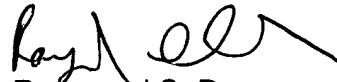
### ***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond S. Dean whose telephone number is 571-272-7877. The examiner can normally be reached on Monday-Friday 6:00-2:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward F. Urban can be reached on 571-272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Raymond S. Dean

October 10, 2006



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